

# MACH2X

WHOLEGARMENT® Computerized Flat Knitting Machine  
MACH2®X123/153/173

*your choice*  
**SHIMA SEIKI**

## Highly Efficient Ultrafine Gauge WHOLEGARMENT® Production.

MACH2®X is a WHOLEGARMENT® specialty machine that features 4 needle beds and SHIMA SEIKI's original SlideNeedle™. It can knit beautifully shaped, high-quality WHOLEGARMENT® products which conform to the body for improved comfort and a more elegant silhouette. As the "MACH" name suggests, speed and productivity are exceptional. MACH2®X achieves a maximum knitting speed of 1.6 meters per second. The R2CARRIAGE® system furthermore permits quicker carriage returns for higher efficiency per knitted course. Split Stitch technique also allows efficient knitting by eliminating empty courses. Additionally, MACH2®X123/153 features 18L gauge capability whereby a special large-hook version of the SlideNeedle™ is used for knitting 15-gauge fabrics at 18-gauge needle pitch for very high productivity when knitting ultrafine gauge garments. The tighter needle pitch also allows for a tighter fabric especially for ribs, contributing to higher-quality WHOLEGARMENT® items. Digital Stitch Control "with intelligence" and Dynamic Tension Control (DSCS®) as well as a USB memory interface and a backup power supply are standard. Dramatic improvements in both quality and productivity make MACH2®X an ideal machine for high-quality WHOLEGARMENT® production.



4-Bed Configuration

MACH2®X presents a technological breakthrough in modern computerized flat knitting, in its 4-needlebed configuration, featuring 2 extra beds on top of a conventional V-bed. This setup allows unprecedented capabilities in knit and transfer, significantly expanding design and patterning capability in WHOLEGARMENT® production. As a result, only SHIMA SEIKI 4-bed WHOLEGARMENT® machines are capable of true WHOLEGARMENT® knitting in all needles.

### The Original SlideNeedle™

In its pursuit for ideal WHOLEGARMENT® production, SHIMA SEIKI has reinvented the most basic element of knitting—the needle. The SlideNeedle™ is the result of a thorough re-evaluation of the 150-year old design of the conventional latch needle. A flexible two-piece slider mechanism replaces the latch and offers knitting possibilities never imagined before. Using the slider mechanism for transfer effectively eliminates the transfer clip, allowing the SlideNeedle™ to be mounted in the center of the needle groove, thereby achieving perfectly symmetrical loop formation for knitting the highest possible quality fabrics.



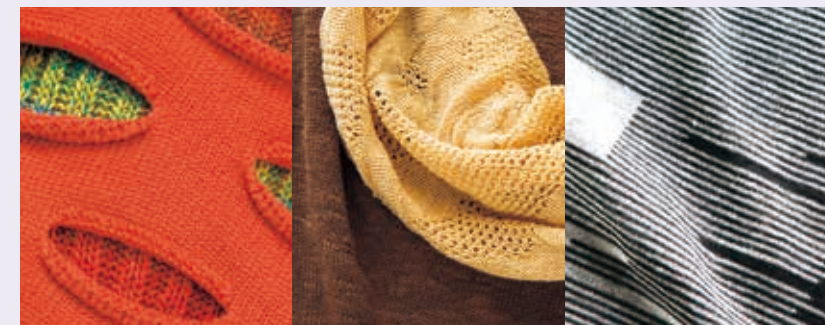
i-DSCS+DTC®

Standard on MACH2®X is i-DSCS+DTC® Digital Stitch Control System "with Intelligence" and Dynamic Tension Control. i-DSCS+DTC® carries over the benefits of DSCS® while achieving the ultimate performance in digital knitting. Whereas DSCS® is a passive system which controls stitch length by mechanically limiting yarn-feed, i-DSCS+DTC® has the capability to actively control yarn-feed in both feed and retrieval directions as necessary, through variable electronic control of yarn tension. This results in even higher quality and greater productivity using a wider variety of yarns, including high-speed knitting of challenging yarns and delicate yarns. Precise electronic control means i-DSCS+DTC® provides consistent quality among different machines, production batches and repeat orders, and is crucial to the precision knitting required in WHOLEGARMENT® production.

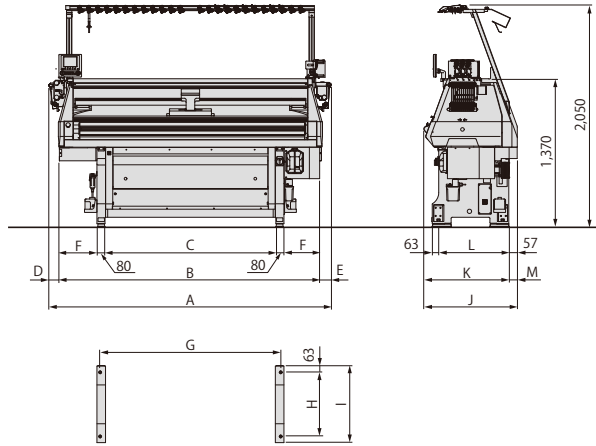


Pulldown Device

MACH2®X's computer-controlled takedown system consists of front and rear panels over which tiny pins are distributed for separately controlling takedown tension for the front and back when knitting WHOLEGARMENT® knitwear. In addition, each panel is separated into 1.5-inch sections which can be individually controlled for specific tension control across the entire width of the garment. This precise control over takedown tension permits three-dimensional shaping of WHOLEGARMENT® items—for example, by allowing shoulder lines for set-in sleeves to be positioned over the shoulder toward the back—resulting in a more dimensionally accurate garment which conforms better to the shape of the torso.



## MACH2®X DIMENSIONS



	A	B	C	D	E	F	G	H	I	J	K	L	M
MACH2®X123	2,620	2,450	1,575	90	80	357.5	1,675	595	715	867	788	595	79
MACH2®X153	2,870	2,700	1,825	90	80	357.5	1,925	595	715	867	788	595	79
MACH2®X173	3,070	2,900	2,025	90	80	357.5	2,125	595	715	867	788	595	79
MACH2®X173 5S	3,470	3,320	2,025	75	75	567.5	2,125	625	745	1,010	888	625	122

All dimensions in millimeters.

### Average Weight

MACH2®X123	1,089kg (2,395 lbs.)
MACH2®X153	1,310kg (2,882 lbs.)
MACH2®X173	1,400kg (3,080 lbs.)
MACH2®X173 5S	1,565kg (3,443 lbs.)

Actual weight is dependent upon gauge and optional equipment.

## SPECIFICATIONS

Type	M123X	M153X	M173X
Gauge	8L · 15L · 18L (L: Large hook)		5S · 8L · 15L (S: Standard hook, L: Large hook)
Knitting width	Variable stroke, max 50" (125cm)		Variable stroke, max 68" (170cm)
Knitting speed	Max 1.6m/sec. (5S: Max 1.2m/sec., 8L: Max 1.4m/sec.) Knitting speed varies according to yarn, gauge and other knitting conditions. Speed can be programmed for 16 separate categories.		
Stitch density	120 levels, electronically controlled		
Second stitch	Motor-controlled second stitch cam allows individual adjustment of loose/tight stitches for shaping. Lower carriage only.		
Racking	Motor-driven. Max 1.5-inch racking to each side (3 inches total) for rear needle beds and loop presser bed. Racking of upper and lower rear beds and loop presser bed are performed as one.		Double racking. Max 1.5-inch racking to each side (3 inches total) for front needle beds. Racking of upper and lower front beds is performed as one.
Knitting system	Ultra compact 3-system (1 knitting system + 2 transfer systems), single carriage (R2CARRIAGE® system)		
SlideNeedle™	Two-piece slider mechanism enables complex transfers. Mounted in the center of needle groove to yield perfectly symmetrical loop formation for knitting the highest possible quality fabrics.		
Transfer	Lower needlebeds: Simultaneous transfer, front and back, independent of carriage direction. Split stitch possible without exchanging yarn carriers. Upper needlebeds: Simultaneous transfer between either upper beds to opposite lower beds, independent of carriage direction.		
Sinker system	Fixed sinker system		
Yarn guide	Moveable yarn guide (5S only)		
Stitch presser	Special motor-drive. On/off adjustment. Press-down amount can also be set according to knit, transfer, etc.		
Loop presser	Individual selection and independent control. Loop presser bed positioned above upper rear needle bed. 5S: Equipped with 2 loop pressers for each needle.		
Needle selection	Electromagnetic direct selection		
Setup device	Takedown comb with special setup needles		
Pulldown device	Special pulldown mechanism with independent operation of front and rear. Precise control over entire garment width in 1.5 - inch increments.		
Exit rollers	Special rollers for fabric pulldown and release. Consists of two rollers.		
Yarn cutter	Single-unit system includes 1 yarn cutter and 2 yarn grippers. Both sides standard. Lint remover.		
Air Splicer <sup>1</sup>	Instant color changes using pressurized air. 2 units on left side; 1 unit on right side. 8 colors per unit.		
DSCS®	Digital Stitch Control System. Consistent loop length by digital control method. 8 lightweight, compact encoders (8L, 15L and 18L only). Left side standard.		
i-DSCS+DTC®	DSCS® with Intelligence+Dynamic Tension Control. Actively controls yarn feed in both feed and retrieval directions. Electronic control of yarn-feed tension permits high-speed knitting. 3 units. Right side standard (5S: 4 units. Both sides standard) <sup>2</sup> .		
Yarn feed roller	8 positions on each side (5S: 16 positions on each side). Left side double roller standard (8L, 15L and 18L only). 8 positions on left side yarn stopper device (8L, 15L and 18L only).		
Side tensions	12 on each side (5S: 16 on each side). Brake disk with multi-step adjustable dials (8L · 15L · 18L only).		
Yarn carriers	12 normal carriers <sup>3 4</sup>		
Top tension	24 units. One-touch easy threading. Large knots cause machine stop. Small knots cause 0-9 courses at specified knot detection speed, then automatically resume at set speed.		
Stop motion	Yarn break, large knot, fabric pileup, shock detection, piece count, over-torque, program error, etc.		
Drive system	Belt drive. AC servo motor. No lubrication necessary.		
Cleaner	Special blower-operated cleaner. Automatic operation available upon knitting a set number of pieces. Manual operation also available.		
Safety devices	Full safety cover for noise-suppression and dust-proofing with stop motion sensor and interlock mechanism. Emergency stop switch. Emergency power off device. Ultra-low speed "crawl" setting. CE Mark. Operation lamp (see below).		
Operation lamp	Green/normal operation. Flashing green/normal stop. Flashing amber/abnormal stop.		
<b>CONTROLLER</b>			
Data input	USB memory interface. Ethernet 10/100 BASE-T network interface.		
Pattern memory	50,331,648 bits (1,024 wales × 16,384 addresses)		
Control unit	Built-in controller. Stored program for flat knitting machine.		
Control display	Monochrome LCD panel. Editing possible via display panel operation. Help/Message function (for cleaning and lubrication). Available in English, French, Italian, Spanish, Portuguese, German, Turkish, Chinese, Korean and Japanese.		
Back-up power	Power supply for resuming knitting after power failure.		
Power	Single phase AC220V/230V(200-250V) 3.0kVA		

OPTIONS: (1) Air Splicer (8L and 15L only) (2) i-DSCS + DTC® 4 units on each side (8L, 15L and 18L only) (3) Plating Carrier supported (8L, 15L and 18L only) (4) Inlay carrier (8L, 15L and 18L only)

*your choice*  
**SHIMA SEIKI**

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## Fully Fashioned High Speed Knitting Machine

**ISO14001 Certification:** SHIMA SEIKI Headquarters is certified as an ISO14001 accredited company.

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### SAFETY NOTICE

In order to ensure safe operation of the equipment, please review all operation manuals carefully before use.